SHIP SYSTEM	SUBSYSTEM	MRC CODE
Hull Structure	Masts Stacks and Macks	R-

SYSTEM	EQUIPMENT	RATES	M/H
Masts Stacks and Macks	Mast Structure Stack and Mack Structure	GS-11/12	24.0

TOTAL M/H
24.0
ELAPSED TIME

MAINTENANCE REQUIREMENT DESCRIPTION
1. Conduct SEMAT assessment procedure for mast structure. (17011)
2. Conduct SEMAT assessment procedure for stack and mack structure (if applicable). (16211)

SAFETY PRECAUTIONS
1. Forces afloat comply with NAVOSH Program Manual for Forces Afloat, OPNAVINST 5100.19 series.

TOOLS, PARTS, MATERIALS, TEST EQUIPMENT

MATERIALS
1. [1609] Magnifier
2. [3187] Ruler, plastic, 6"

TOOLS
1. [0611] Hammer, hand, Scaling, 1 LB
2. [1157] Scraper, bearing, Flat, end cutting, carbide tip
3. [1350] Tape, measuring, 3/8" steel, 100 FT, hand crank
4. [2271] Flashlight, Type 3, style 1, explosive proof

MISCELLANEOUS
1. Ultrasonic test meter with calibration test blocks, patch cords and accessories, spare batteries and probe
2. Ships drawings (as required)

NOTE: Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for stock number identification.

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PROCEDURE

NOTE 1: Accomplish assessment before availability, after availability, and before deployment.

NOTE 2: Number of personnel and man-hours assigned is average for DD-class ships and may require adjustment for larger class of ships.

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LOCATION	DATE
	August 1997

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PROCEDURE (Contd)

Preliminary

a. Obtain a copy of ship's Compartment and Access plan to assist assessment.
b. Obtain a copy of ship's Repair Inspection Requirements (RIR) sheets for reference during this assessment.
c. Review JSNs from the ship's CSMP for discrepancies to be assessed under this procedure.

1. **Conduct SEMAT Assessment Procedure for Mast Structure. (17011)**
   a. Conduct a visual and hammer assessment of the mast and supporting structure aboard ship. Examples of items to be assessed but not limited to are:
      (1) Mast structure.
      (2) Supporting platforms.
      (3) Yardarms.
      (4) Handrails and stanchions.
      (5) Pads.
      (6) Structural fittings.
      (7) Ladders and safety climb rails.
      (8) Foundations.
      (9) Cableway trunks and hangers.
      (10) Bimetallic and/or bolted connections.
   b. Assess material condition of mast; items to look for but not limited to are:
      (1) Buckling and cracked welds.
      (2) Holes and pitting.
      (3) Rust, scale, and peeling paint (deterioration/exfoliation).
      (4) Bimetallic joints and Huck bolted or riveted joints for corrosion/exfoliation.
      (5) Damage and distortion.

NOTE 3: Pay particular attention to aft mast structural members (if applicable).

      (6) Obvious liquid traps (no drain holes in platform and horizontal stiffeners).

NOTE 4: Visual assessment of welded areas requires removing the paint in the assessment area if there is evidence of paint cracking or chipping. A magnifying glass (5x or greater) is to be used to verify existence of crack.

NOTE 5: Dissimilar metals can cause rapid exfoliation, general corrosion, stress corrosion, and pitting of aluminum alloys. Aluminum to steel deck connections (particularly riveted joints) should be probed for exfoliation.

   c. Assess material condition of stiffeners. Items to look for but not limited to are:
      (1) Deterioration, fractures, distortion, buckling, and cracked welds.
      (2) Brackets, chocks, and collar plates.
      (3) Drain holes.
      (4) Butt alignment.
   d. Assess rivets, Huck bolts, and bolts for deterioration, loose, missing, cracked components, and signs of leakage and/or corrosion.

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PROCEDURE (Contd)

e. Assess material condition of ladders, fasteners, clips, and brackets and safety climb rails. Items to look for but not limited to are:
   (1) Deterioration.
   (2) Missing, odd sized bolts, nuts, washers, and clips.
   (3) Cracks in ladders.
   (4) Grounding straps.
   (5) Cracked, pitted, bent or corroded ladder climber safety rails.

f. Assess material condition of foundations. Items to look for but not limited to are:
   (1) Buckling and cracked welds.
   (2) Rust, scale, and peeling paint.
   (3) Completely welded and properly welded.
   (4) Drain holes.
   (5) Grounding straps.

g. Assess paint for blisters, peeling paint, and apparent increase in paint film thickness which may indicate hidden corrosion/exfoliation.

2. **Conduct SEMAT Assessment for Stack and Mack Structure (if applicable). (16211)**

NOTE 6: This procedure describes requirements for conducting an assessment of plating for stacks and macks (combined stack and mast) including outer casing structure, grating, grab rods, foot rails, inboard stiffeners, bulkheads, deck levels, and foundation support fittings.

NOTE 7: When performing assessment, pay particular attention to preservation of wet areas, relatively inaccessible areas, foundations and adjoining areas, transverse framing and longitudinals where they join exterior bulkheads subject to weather, and other areas where heavy deterioration might occur. A chipping hammer is useful in evaluating potential areas of deterioration.

NOTE 8: Hairline cracks may appear in plating or welded seams due to metal fatigue or inferior welding. Particular attention should be given to areas where watertight integrity is concerned.

a. Visually assess the stacks outer casing structure including gratings, grab rods, foot rails, and foundation support fittings for damage, deterioration, cracked plates/welds, distortion, missing/broken parts/sections, missing supports, loose sections, wear, and tightness of rivets/bolts.

b. Visually assess the macks outer casing structure including inboard stiffeners, bulkheads, deck levels, foundation support fittings, access covers, and ladders.

c. Visually assess seams and joints for deterioration, cracked welds, and loose rivets/bolts.

d. Visually assess painted surfaces for blisters and apparent increase in paint film thickness which may indicate hidden corrosion.

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PROCEDURE (Contd)

NOTE 9: Where visual assessment indicates damage to an extent that the integrity of the structure is questionable, nondestructive testing should be performed at the discretion of the assessor. Determine thickness of metal. Ensure corrosion is chipped away and measurement is taken on bare flat metal surface. The following table of minimum scantling sizes is for general use and is based on 75% of original thickness:

MEMBER	INSTALLED	SCANTLING THICKNESS	MIN ALLOWABLE THICKNESS
PLATE	40.8#	1.000	0.750
PLATE	35.7#	0.875	0.656
PLATE	30.6#	0.750	0.563
PLATE	20.4#	0.500	0.375
PLATE	15.3#	0.375	0.281
PLATE	10.2#	0.250	0.188
PLATE	7.65#	0.188	0.141

e. Record results of assessment:
   (1) Thickness of metal.
   (2) Percent of deterioration.
   (3) Depth of pits.
   (4) Areas of metal fatigue.
   (5) Cracked welds.
   (6) Location of deteriorated areas.

2. **Record all discrepancies identified on applicable SEMAT discrepancy forms (2-K or Material Assessment Form).**

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